

## **FREE SPACE OPTICAL SYSTEM WITH MULTIPLE FUNCTION DETECTORS**

### **ABSTRACT OF THE DISCLOSURE**

- 5           An optical fiber assembly includes an optical fiber and ferrule. The ferrule's face is partitioned into several regions. Optical elements can be formed on the regions to diffract light incident on the ferrule. Alternatively, the ferrule's face may have several reflective facets. Light incident on the end of the optical fiber propagates to a communications detector. Light incident on the ferrule's
- 10   face is redirected to tracking detectors, each arranged to receive the redirected light from a preselected region of the ferrule. The output signals of the tracking detectors are used to adjust the alignment between the incident light and the assembly. Alternatively, tracking fibers or a quadrant cell may be used to directly receive light that would otherwise be incident on the ferrule's face.